

SILVER

(Data in metric tons¹ of silver content unless otherwise noted)

Domestic Production and Use: In 2017, U.S. mines produced approximately 1,020 tons of silver with an estimated value of \$564 million. Silver was produced at 4 silver mines and as a byproduct or coproduct from 36 domestic base- and precious-metal mines. Alaska continued as the country's leading silver-producing State, followed by Nevada. There were 24 U.S. refiners that reported production of commercial-grade silver with an estimated total output of 1,950 tons from domestic and foreign ores and concentrates and from new and old scrap. The physical properties of silver include high ductility, electrical conductivity, malleability, and reflectivity. In 2017, the estimated domestic uses for silver were electrical and electronics, 36%; coins and medals, 22%; jewelry and silverware, 7%; photography, 5%; and other, 30%. Other applications for silver include use in antimicrobial bandages, clothing, pharmaceuticals, and plastics; batteries; bearings; brazing and soldering; catalytic converters in automobiles; electroplating; inks; mirrors; photovoltaic solar cells; water purification; and wood treatment. Mercury and silver, the main components of dental amalgam, are biocides, and their use in amalgam inhibits recurrent decay.

Salient Statistics—United States:	2013	2014	2015	2016	2017^e
Production:					
Mine	1,040	1,180	1,090	1,150	1,020
Refinery:					
Primary	800	800	800	800	800
Secondary (new and old scrap)	1,700	1,400	1,200	1,300	1,150
Imports for consumption ²	5,080	5,000	5,930	6,160	5,270
Exports ²	409	380	818	289	160
Consumption, apparent ³	6,670	6,920	8,000	7,600	5,770
Price, average, dollars per troy ounce ⁴	23.89	19.09	15.72	17.20	17.20
Stocks, yearend:					
Industry	110	120	130	140	150
Treasury Department ⁵	498	498	498	498	498
New York Commodities Exchange—COMEX	5,350	5,610	5,000	5,710	7,210
Employment, mine and mill, number ⁶	1,284	1,185	1,204	1,189	959
Net import reliance ⁷ as a percentage of apparent consumption	59	63	71	68	62

Recycling: In 2017, approximately 1,150 tons of silver was recovered from new and old scrap, about 20% of apparent consumption.

Import Sources (2013–16):² Mexico, 48%; Canada, 32%; Peru, 5%; Poland, 4%; and other, 11%.

Tariff: Item	Number	Normal Trade Relations 12–31–17
Silver ores and concentrates, silver content	2616.10.0040	0.8 ¢/kg on lead content.
Bullion, silver content	7106.91.1010	Free.
Dore, silver content	7106.91.1020	Free.

Depletion Allowance: 15% (Domestic), 14% (Foreign).

Government Stockpile: The U.S. Department of the Treasury maintains stocks of silver (see salient statistics above).

Events, Trends, and Issues: The estimated average silver price in 2017 was unchanged from the average price in 2016. The price began the year at \$16.03 per troy ounce, increased to a high of \$18.56 per troy ounce on April 13, and then fell to a low of \$15.34 per troy ounce on July 10. The silver price range over the course of 2017 narrowed in comparison with that in 2016, which saw slightly more than double the dollar difference between the high and low prices.

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In 2017, global consumption of silver was estimated to have decreased by 5% from that of 2016. A significant decrease in silver consumption for coins and bars, which was projected to fall to a 10-year low following record high sales in 2015, was slightly offset by increased consumption for industrial fabrication, jewelry fabrication, and silverware. Of the industrial uses, consumption of silver for brazing and alloys, electronics, ethylene oxide, and solar applications was expected to increase in 2017.⁸ Global yearend stocks of refined silver continued to increase and were projected to be at a 10-year high for a second consecutive year owing to a reduction of consumption in physical silver.

World silver mine production decreased in 2017 to 25,000 tons, principally as a result of decreased production from mines in Argentina, Australia, Bolivia, Chile, Peru, and the United States. The world's top silver-producing companies experienced reductions in production owing to governmental issues with licensing, reduced ore grades, and worker strikes at various projects. Domestic silver mine production decreased by 11% in 2017 compared with that in 2016 largely owing to a strike at one of the four primary silver mines in the United States, which began in the second quarter of 2017. With physical demand down and a relatively moderate price for silver, the development of new projects has slowed as well.

World Mine Production and Reserves: Reserves for Chile, Peru, Poland, and Russia were revised based on new information from official Government sources.

	Mine production		Reserves ⁹
	2016	2017 ^e	
United States	1,150	1,020	25,000
Australia	1,420	1,200	¹⁰ 89,000
Bolivia	1,350	1,200	22,000
Chile	1,500	1,200	27,000
China	2,380	2,500	39,000
Kazakhstan	1,180	1,200	NA
Mexico	5,360	5,600	37,000
Peru	4,370	4,500	93,000
Poland	1,270	1,400	89,000
Russia	1,570	1,600	55,000
Other countries	<u>4,100</u>	<u>3,600</u>	<u>57,000</u>
World total (rounded)	25,700	25,000	530,000

World Resources: Although silver was a principal product at several mines, silver was primarily obtained as a byproduct from lead-zinc mines, copper mines, and gold mines, in descending order of production. The polymetallic ore deposits from which silver was recovered account for more than two-thirds of U.S. and world resources of silver. Most recent silver discoveries have been associated with gold occurrences; however, copper and lead-zinc occurrences that contain byproduct silver will continue to account for a significant share of reserves and resources in the future.

Substitutes: Digital imaging, film with reduced silver content, silverless black-and-white film, and xerography substitute for traditional photographic applications for silver. Surgical pins and plates may be made with stainless steel, tantalum, and titanium in place of silver. Stainless steel may be substituted for silver flatware. Nonsilver batteries may replace silver batteries in some applications. Aluminum and rhodium may be used to replace silver that was traditionally used in mirrors and other reflecting surfaces. Silver may be used to replace more costly metals in catalytic converters for off-road vehicles.

^eEstimated. NA Not available.

¹One metric ton (1,000 kilograms) = 32,150.7 troy ounces.

²Silver content of base metal ores and concentrates, refined bullion, and dore; excludes coinage, and waste and scrap material.

³Defined as mine production + secondary production + imports – exports + adjustments for Government and industry stock changes. Series has been updated to include changes in COMEX stocks.

⁴Engelhard's industrial bullion quotations. Source: Platts Metals Week.

⁵Balance in U.S. Mint only; includes deep storage and working stocks.

⁶Source: U.S. Department of Labor, Mine Safety and Health Administration. Only includes mines where silver is the primary product;.

⁷Defined as imports – exports + adjustments for Government and industry stock changes.

⁸Wiebe, Johann, 2017, Silver survey update 2017—The Silver Institute—2017 interim report: GFMS, Thompson Reuters, November 15, 35 p.

⁹See [Appendix C](#) for resource and reserve definitions and information concerning data sources.

¹⁰For Australia, Joint Ore Reserves Committee-compliant reserves were about 26,000 tons.